CHURCH DOOR FROM RIO JANEIRO.

THE annexed engraving is a representation of the principal door of one of the churches, facing Palace-square, in the capital of the Brazils, and will serve to give some idea of the style of architecture prevailing there. It is chiefly sculptured in granite. The medallion containing the Virgin and Child is of marble, and the door, about 8 ft. wide, is of a dark grained native wood. The general effect is good.

DOORWAY IN RIO JANEIRO.

THE STUDY OF NATURAL PHILOSOPHY AND CHEMISTRY.*

IN this era of *fast* reading and superficial though general acquirement, doubtless there are would-be students who would fain have a railway route through the scientific district at large, by express train, 'going and returning in a day,' and will therefore open such a cheap little treatise as the first of those just noted, in the hope of finding the long looked for and awaited train announced at last; but the bearings of the district are not yet surveyed—the mutual and precise relationships of the different principles, such as light, heat, electricity, magnetism, and the mechanical, geological, and gravitative forces, are not yet ascertained—so that in place of one connected field of science, *rationately* or *relationally* traversed by a single great trunk line of science, ramifying into all its natural and affinitive branches, we have what are yet much more like a multitude of separate or isolate sciences conglomerated into one heterogeneous mass, through which, with the best of good will, no scientific guide can possibly conduct the *indolent* student with anything in the least like railway ease or speed. We hope to see the day when all the *different sciences* of light, heat, electricity, &c., will be viewed as from a height, and almost at a glance, running on with explicable currency from trunk to branch and branch to *twig*, and then we shall *know why* it is that all so differ and are yet all so identical, or at least related, that the one runs imperceptibly into the other,—and indeed we have a glimpse of the key, the map of the district and its surveys; but as it is, the reader, as Mr. Tomlinson does not hesitate at once to preface, "must be prepared to bestow a higher effort of mind in the perusal of the work than is required for the appreciation of a romance, or even of a treatise on *popular science*, as the term is often understood. He must be prepared to *study* the work, and not merely to glance over its pages. If he find it difficult on a first perusal, let him give it a second, or a third, and we may venture to assure him that his labour will not be misapplied."

Nevertheless, and minus all that levelling process not yet accomplished, this author has, we think, faithfully and well succeeded in his expressed endeavour "to be to the reader who wishes to travel rapidly (by the best of vehicles, *we* would say, *short* of the locomotive) over the rich and broad domain of natural philosophy, that, in some degree, which the guide is to the traveller."

At the close of his brief tour or sketch of these scientific provinces, the author of this little treatise says—

"Should the young student who has followed us through this hasty sketch seek in vain for the moral of our story, and ask, 'What is the use of natural philosophy?' we may reply by quoting Franklin's answer to a similar inquiry, 'What is the use of a new born infant?' The germs of all scientific research contain the elements of future strength and usefulness. All our knowledge bears reference either to speculation or to action, and hence may be divided into the theoretical and the practical. The first constitutes the natural basis of the second, and every branch of industry has derived inestimable benefit from scientific theories. Who could have supposed that the ancient Greek geometers, while speculating on the properties of the conic sections, would be of infinite service, after a long series of ages, in rennvating the science of astronomy, and bringing the art of navigation to a perfection which it would probably not have attained in our own day but for the purely theoretical labours of Archimedes and Apollonius; so that, as Condorcet beautifully remarks, 'the sailor who has been preserved from shipwreck by an accurate observation of the longitude, owes his life to a theory conceived two thousand years ago, by men of genius who had in view only simple geometrical speculations.' Hence we must never test the value of scientific discoveries by their practical application. If not applicable now, they may become so hereafter, as the whole history of science proves. It is enough for us that our highest intellectual capacities are trained and gratified by the study of natural laws, because, in proportion as we master them, we gain power over the material universe. Our knowledge, it is true, proceeds by slow and painful steps; it is constantly obscured by error, doubt, and difficulty; but there is this cheering influence connected with studies of this kind, that the more we know, the less we have to remember; for in proportion as knowledge is collected and generalized into laws or principles, the greater is its simplicity: in proportion as we increase in real knowledge, we increase in power; for the fewer these principles are, the more general does each of them become, and therefore the more extended in their application, and the more power must accrue from their knowledge."

The last-named author, Dr. Thomson, takes the student up where the first sets him down. "The science of electricity," says Mr. Tomlinson, "necessarily leads the student into the domain of chemistry, where it is not our business to enter. It may, however, be desirable to endeavour to form a clear idea of the precise distinction between natural philosophy and chemistry. The distinction is becoming every day less precise, for it is no longer possible to divide the book of nature into volumes and sections, and chapters, and deal them out to separate students for examination and interpretation."

For the sake, however, of affording here also, within our limited space, some little idea of Dr. Thomson's work, we shall quote from the outset of his prefatorial remarks on this same distinction:—"It has been said by Bergmann, that Natural History, or the study of animals, plants, and minerals, teaches us the elementary rudiments or alphabet of the great book

* Introduction to the Study of Natural Philosophy, for the use of beginners, by Charles Tomlinson (Weale, Holborn).—School Chemistry, or Practical Rudiments of the Science, by Robert Dundas Thomson, M.D., Master in Surgery of the University of Glasgow. (Longman and Co., Paternoster-row).

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